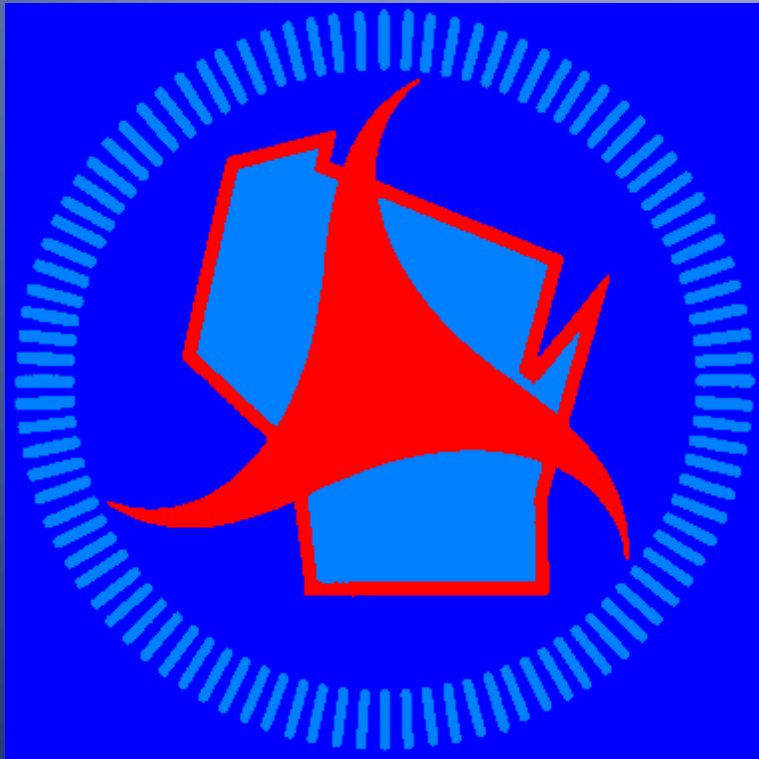


USING COMPOST FOR EROSION CONTROL AND STORMWATER MANAGEMENT



STORMWATER 2010
WAVE OF THE FUTURE
APRIL 28, 2010

Wisconsin Department of
Transportation

DEFINITIONS

“Compost” is the product from the controlled biologic decomposition of organic material that has been sanitized through the generation of heat and stabilized to a point that it is beneficial to plant growth.

Compost is produced through the activity of aerobic microorganisms. These microbes require oxygen, moisture, and food in order to grow and multiply. When these resources are maintained at optimal levels, the natural decomposition process is greatly accelerated.

From “Field Guide to Compost Use”, USCC 1996

WHY COMPOST ?

- Because of:
 - reductions in soil quality
 - poor soil protection & management practices
 - increased soil erosion
 - storm water management requirements
 - climate change
 - pollutant management & remediation
 - improved plant growth / less loss
 - less plant maintenance inputs
- Effective & economic
- Protection of surface & ground water quality

Because it works!

EROSION/SEDIMENT CONTROL AND STORMWATER MANAGEMENT

- Compost Blankets
- Compost Filter Berms
- Filter Socks

Compost Blankets

- What is a compost blanket? Loosely applied compost placed on soil in disturbed areas
- Controls erosion and retains runoff resulting from sheet flow
- Typically used in place of hydromulch, geotextiles, or drill-seeding with straw matting



BENEFITS OF COMPOST BLANKETS

- **Can be used on any soil surface**
 - Rocky or frozen ground
 - Steep slopes (1:1)
- **Intimate contact allows nearly 100% ground contact, eliminating puckering of other blankets and reduces sediment loss**
- **Seed mixed into compost before it is placed allows even seed distribution**
- **Compost retains water, which helps seed germination**
- **Compost provides soil nutrients and aids in plant growth**
- **Blanket can be blown onto surface, so equipment and workers do not need to access slope**

COMPOST BLANKET

La Crosse Test Site 2004



Ready for installation of
compost blankets

Compost blanket installed

After 2.5 " rainfall in one-hour

Effectiveness of Compost Blankets

- **Study conducted by Iowa State University for Iowa DOT**
- **Study compared:**
 - Direct seeding into embankment topsoil
 - Imported topsoil/seeding of embankment
 - Seeded compost blanket
- **Erosion rate from blanket area was 0.02 percent that of the topsoil areas**

COMPOST FILTER BERM

- **What is a compost filter berm?**
A dike of compost placed perpendicular to sheet flow runoff in a disturbed area
- **Controls erosion, retains sediment, and absorbs pollutants. Use in concentrated flow conditions if drainage area is small**
- **Replaces traditional BMPs such as straw waddles and silt fence**



BENEFITS OF COMPOST FILTER BERMS

- Can be used on rocky or frozen ground
- Does not require trenching for installation
- Low profile is not blown down by high winds
- Seed mixed into compost before placement allows even seed distribution
- Compost retains water, which helps seeds germinate and anchor berm to soil surface
- Berm has higher permeability than silt fence, allowing more clean water to pass through

COMPOST FILTER SOCKS

- **What is a compost filter sock? A mesh tube filled with compost placed perpendicular to runoff**
- **Controls erosion, retains sediment, and adsorbs pollutants Use to treat sheet flow runoff or concentrated runoff from small drainages**
- **Replaces traditional BMPs such as silt fence, rock berms, and straw waddles**



BENEFITS OF COMPOST FILTER SOCKS

- **Can be placed in many environments:**
 - steep slopes
 - small drainage ways
 - on rocky or frozen ground
 - storm drain inlet protection on pavement; does not require trenching for installation
- **Shorter socks can be removed and reused**
- **Low profile is not blown down by high winds**
- **Higher permeability than silt fence, allowing more clean water to pass through**

FILTER SOCKS

I-43/ Bowers Road Interchange 2006



Channelized flow coming off the saturated roadbed



Sediment over-topped the bags



Channelized flow reinforced the bags

Effectiveness of Compost Filter Socks

- **Qualitative studies: filter socks are effective in removing settleable and total suspended solids At least as effective as traditional BMPs, such as silt fence**
- **Quantitative study performed by Filtrex International:**
 - Laboratory test of filter socks with 13 types of compost
 - All filter socks removed over 50 percent of motor oil in simulated stormwater (1,000 to 10,000 mg/L)

WisDOT TO USE MORE COMPOST

- Working with US Composting Council
- Seal of Testing Assurances (STA) program
- Write Standard Specifications based on STA
- Spec. drafting team in place

WisDOT IS WORKING WITHIN THE STA PROGRAM AND AASHTO STANDARDS

- Wisconsin has two STA approved composters
 - HSU in Wausau
 - White Oak Nursery in Waukesha
- AASHTO Standard
 - Compost Blankets MP-10
 - Filter Berms and Socks MP-9

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QUESTIONS

